

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An inspection system for inspecting samples, comprising:
a polar coordinate stage having a chuck and a track, wherein the chuck and the track are coupled such that the chuck can be moved to different positions along the track, and wherein the chuck can be rotated about a center of rotation;
an optical imaging system, having a field of view, which receives a probe beam reflected off a sample positioned on the chuck; and
a processor system which controls the position of the chuck relative to the track, and uses first information derived from positioning a site on a sample in the field of view to determine an offset from ~~[[the]]~~ a center of the field of view to the center of rotation of the polar coordinate stage, wherein the first information is used to determine a location of a site on a sample being inspected.
2. (original) The inspection system of claim 1, wherein the first information is determined by positioning a first site in the field of view, and then rotating the chuck 180 degrees, and moving the chuck a distance equal to twice a first distance where the first distance corresponds to a distance between the chuck at the first position and a home position, and then positioning the first site in the field of view.

3. (original) The inspection system of claim 2 further comprising:

an operator control coupled to the processor such that an operator can control the position of the chuck; and

wherein after the first site has been positioned in the field of view, and the chuck has been rotated 180 degrees and been moved a distance equal to twice the first distance, the operator uses the operator controls to position the first site in the field of view, and the processor system stores information which corresponds to an amount of rotation and an amount of movement necessary to position the first site in the field of view.

4. (original) The inspection system of claim 2, wherein the processor is programmed such that after the first site is positioned in the field of view, the processor causes the chuck to rotate 180 degrees, and to move a distance equal to twice the first distance.

5. (original) The inspection system of claim 4 further comprising:

an operator control coupled to the processor such that an operator can control the position of the chuck; and

wherein after the first site has been positioned in the field of view, and the chuck has been rotated 180 degrees and been moved a distance equal to twice the first distance, the operator uses the operator controls to position the first site in the field of view, and the processor system stores information which corresponds to the amount of rotation and movement necessary to position the first site in the field of view.

6. (original) The inspection system of claim 1, wherein the first information is determined by positioning the chuck in a first position having a first site positioned in the field of view, where the first site is positioned in the field of view by rotating the chuck a first number of degrees, and moving the chuck a first distance from a home position, and then positioning the chuck in a second position by rotating the chuck 180 degrees, and moving stage a distance equal to twice the first distance, then rotating the chuck a second number of degrees $\Delta\Theta$ and moving the chuck a second distance ΔR to position the first site in the field of view, wherein the processor determines the position of the center of rotation in the home position, in terms of x and y coordinates when the chuck is in the second position, where these coordinates are referred to as x(site) and y(site); and where the processor is programmed to determine the first information using the following equations:

$$y(\text{lens}) = \Delta R/2, \text{ and}$$

$$x(\text{lens}) = \tan(\Delta\Theta/2) \cdot [(x(\text{site})^2 + y(\text{site})^2)^{1/2} - \Delta R/2].$$

7. (currently amended) In an inspection system having a processor system and a polar coordinate stage which includes a chuck for supporting a sample, a method for determining an offset between a center of rotation of a polar coordinate stage and a center of a field of view of an imaging system, the method comprising:

moving the chuck to a first position which is a first distance from a home position, such that a first site is positioned in the field of view;

rotating the chuck 180 degrees and moving the chuck twice the first distance, such that the chuck is in a second position;

adjusting the position of the chuck such that the chuck is in a third position where the first site is positioned in the field of view;

using a $\Delta\Theta$ degrees of rotation associated with adjusting the position of the chuck from the second position to the third position, and a distance ΔR associated with adjusting the position of the chuck from the second position to the third position, to determine the offset between the center of rotation of the polar coordinate stage when it is in the home position and the center of the field of view, and;

using the offset to control the movement of the chuck to position a particular location on a wafer in the field of view.

8. (original) The method of claim 7 further comprising:

programming the processor system to move the chuck from the first position to the second position.

9. (original) The method of claim 8 further comprising:

transmitting operator inputs to the processor system, and in response the processor system causes the chuck to move from the second position to the third position.

10. (original) The method of claim 7 further comprising:

determining an x coordinate, $x(\text{site})$, for a home position center of rotation in terms relative to the position of the chuck when it is in the second position; and

determining a y coordinate, $y(\text{site})$, for the home position center of rotation in terms relative to the position of the chuck when it is in the second position.

11. (original) The method of claim 10 further comprising:

causing the processor to determine the offset from the field of view to the center of the rotation using the following equations,

$$y(\text{lens}) = \Delta R/2, \text{ and}$$

$$x(\text{lens}) = \tan(\Delta\Theta/2) \cdot [(x(\text{site})^2 + y(\text{site})^2)^{1/2} - \Delta R/2],$$

where $y(\text{lens})$ and $x(\text{lens})$ correspond to the position of the field of view relative to the center of rotation when the chuck is in the home position.

12. (currently amended) In an inspection system having an imaging system with a field of view, and a stage which includes a chuck for supporting a sample, a method for determining an offset between a center of rotation of the stage and ~~the~~ a center of the field of view, the method comprising:

positioning the chuck in a first position based on a first site being positioned in the field of view;

positioning the chuck in a second position such that the first site is positioned in the field of view;

determining the difference between the first position and the second position; and

using the difference between the first position and the second position to calculate the offset between the center of rotation of the stage and the center of the field of view.

13. (original) The method of claim 12 further comprising using the offset to control the positioning of the chuck.

14. (original) The method of claim 12 further comprising determining the difference between the first position and the second position and in terms of an angle of rotation, $\Delta\Theta$, and a distance of movement ΔR .

15. (original) The method of claim 14 further comprising:

determining x and y coordinates, x(site) and y(site), for a center of rotation in a home position relative to the chuck when it is in the first position.

16. (original) The method of claim 14 further comprising:

determining a y dimension of the offset between the field of view and the center of rotation using the equation,

$$y(\text{lens}) = \Delta R/2.$$

17. (original) The method of claim 15 further comprising:

determining a x dimension of the offset between the field of view and the center of rotation using the equation,

$$x(\text{lens}) = \tan(\Delta\Theta/2) \cdot [(x(\text{site})^2 + y(\text{site})^2)^{1/2} - \Delta R/2].$$

18. (original) The method of claim 15 further comprising:

determining a x dimension of the offset between the field of view and the center of rotation using the equation,

$$x(\text{lens}) = \tan(\Delta\Theta/2) \cdot [(x(\text{site})^2 + y(\text{site})^2)^{1/2} - \Delta R/2]; \text{ and}$$

determining a y dimension of the offset between the field of view and the center of rotation using the equation,

$$y(\text{lens}) = \Delta R/2.$$

19. (currently amended) An inspection system for inspecting samples, comprising:
- a stage having a chuck coupled to a track, such that the chuck can be moved to different positions along the track, and rotated about a center of rotation
 - an optical imaging system having a field of view; and
 - a processor system which controls the position of the chuck relative to the track, and uses first information corresponding to an offset between a center in the field of view and the center of rotation to determine a location of a site on a wafer being inspected.
20. (currently amended) In an inspection system having a stage with a center of rotation, and an imaging system with a field of view, a method for determining a location of a site on a wafer being inspected, the method comprising:
- establishing a stage home position;
 - using a processor to control the position of the stage; and
 - using an offset between the center of rotation and a center of the field of view to determine the location of a site being inspected by the inspection system relative to the stage home position.
21. (currently amended) In an inspection system having a processor system and a stage which includes a chuck for supporting sample, a method for determining an offset between a center of rotation of a the stage and an imaging system having a center of a field of view the method comprising:
- moving a chuck of the stage to a first position which is a first distance from a home position, such that a first site on a sample is positioned in a field of view;

moving the chuck to a second position where the first site is positioned in the field of view; and

using the difference between the second position and a third position where the chuck is rotated 180 degrees from the first position and moved twice the first distance from the first position, to determine the offset.